

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)

7. Provide a description of the method of flow measurement or estimate.

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.385 MG

7. Provide a description of the method of flow measurement or estimate.

[illegible]

	Maximum Values	Average Values		
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Part B –	List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.
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	Maximum Values (include units)	Average Values (include units)	Number
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[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
11/4/2010	600	0.94	172		0.362 MG

7. Provide a description of the method of flow measurement or estimate.

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
11/4/2010	600	0.94	172		.036 MG

7. Provide a description of the method of flow measurement or estimate.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number (if available)	Maximum Values (include units)		Average Values (include units)		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				* See Note Below
Biological Oxygen Demand (BOD5)	36.6 mg/l					* See Note Below
Chemical Oxygen Demand (COD)	330 mg/l					* See Note Below
Total Suspended Solids (TSS)	1552 mg/l					* See Note Below
Total Nitrogen						* See Note Below
Total Phosphorus	0.61 mg/l					* See Note Below
pH	Minimum	Maximum	Minimum	Maximum		* See Note Below

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.019 MG

7. Provide a description of the method of flow measurement or estimate.

7.7. Provide a description of the nature of new measurement or estimate.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

	Maximum Values (include units)	Average Values (include units)	Number
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Part B –	List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.
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	Maximum Values (include units)	Average Values (include units)	Number
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[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.101 MG

7. Provide a description of the method of flow measurement or estimate.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

EPA Form 3510-2F (1-92) Page VII-1 Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)

7. Provide a description of the method of flow measurement or estimate.

Outfall 009 serves as an outfall for storm water diverted around the active landfill and certain landfill roadways. A large sedimentation pond currently serves to collect this storm water. Currently, storm water that falls on the landfill is directed to the leachate system and ultimately the waste water treatment plant. At a point in the future, once the landfill is closed, this stormwater will be redirected to the sedimentation pond. However, due to the size of the pond and the relatively small amount of storm water directed to the pond, no discharge from this outfall has occurred for a number of years. As such no storm water samples have been collected. The new boiler project has potential to impact this outfall.

[illegible]

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		6.122 MG

7. Provide a description of the method of flow measurement or estimate.

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Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B –	List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.
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EPA Form 3510-2F (1-92) Page VII-1 Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.101 MG

7. Provide a description of the method of flow measurement or estimate.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B –	List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.
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						* Dust, Vegetation, Road Dirt,
						Debris from Vehicular Traffic,
						Wood Debris

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.116 MG

7. Provide a description of the method of flow measurement or estimate.

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Continue on Reverse

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
10/13/2010	18	0.94	228		0.011 MG

7. Provide a description of the method of flow measurement or estimate.

Section

E

The 2007 VPDES permit VA0003646 required that Water Quality Standards Monitoring be conducted in 2009 and that the data be submitted with the permit reissuance application. The information required by Condition B 14 of Part I is provided on the following pages.

ATTACHMENT A
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY CRITERIA MONITORING

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY ⁽³⁾
DISSOLVED METALS						
7440-36-0	Antimony	200.8	0.0002	.00246 <0.0002	G	2/5 YR
7440-38-2	Arsenic	200.8	0.005	<0.005 <0.005	G	2/5 YR
7440-43-9	Cadmium	200.8	0.0002	<0.0002 <0.0002	G	2/5 YR
16065-83-1	Chromium III ⁽⁹⁾	200.8	0.001	0.003	G	2/5 YR
18540-29-9	Chromium VI ⁽⁹⁾	SW846:7196	0.010	<0.01 <0.01	G	2/5 YR
7440-50-8	Copper	200.8	0.004	<0.004 <0.004	G	2/5 YR
7439-92-1	Lead	200.8	0.0002	0.00089 <0.0002	G	2/5 YR
7439-97-6	Mercury	SW846:7470	0.0002	<0.0002 <0.0002	G	2/5 YR
7440-02-0	Nickel	200.8	0.012	<0.012 <0.012	G	2/5 YR
7782-49-2	Selenium	200.8	0.002	0.00475 <0.002	G	2/5 YR
7440-22-4	Silver	200.8	0.001	<0.001 <0.001	G	2/5 YR
7440-28-0	Thallium	200.8	0.0002	<0.0002 <0.0002	G	2/5 YR
7440-66-6	Zinc	200.8	0.030	<0.030 <0.030	G	2/5 YR
PESTICIDES/PCB'S						
309-00-2	Aldrin	608	0.05	<0.05 <0.05	G or C	2/5 YR
57-74-9	Chlordane	608	0.2	<0.2 <0.2	G or C	2/5 YR
2921-88-2	Chlorpyrifos (synonym = Dursban)	622	0.94	<0.94	G or C	2/5 YR
72-54-8	DDD	608	0.1	<0.1 <0.1	G or C	2/5 YR
72-55-9	DDE	608	0.1	<0.1 <0.1	G or C	2/5 YR
50-29-3	DDT	608	0.1	<0.1 <0.1	G or C	2/5 YR
8065-48-3	Demeton	SW846:8080	0.21	<0.21	G or C	2/5 YR
60-57-1	Dieldrin	608	0.1	<0.1 <0.1	G or C	2/5 YR
959-98-8	Alpha-Endosulfan	608	0.1	<0.1 <0.1	G or C	2/5 YR
33213-65-9	Beta-Endosulfan	608	0.1	<0.1 <0.1	G or C	2/5 YR
1031-07-8	Endosulfan Sulfate	608	0.1	<0.1 <0.1	G or C	2/5 YR
72-20-8	Endrin	608	0.1	<0.1 <0.1	G or C	2/5 YR
7421-93-4	Endrin Aldehyde	SW846:8080	0.1	<0.1 <0.1	G or C	2/5 YR
86-50-0	Guthion	622	0.94	<0.94	G or C	2/5 YR
76-44-8	Heptachlor	608	0.05	<0.05 <0.05	G or C	2/5 YR
1024-57-3	Heptachlor Epoxide	SW846:8080	0.10	<0.10 <0.10	G or C	2/5 YR

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY ⁽³⁾
319-84-6	Hexachlorocyclohexane Alpha-BHC	SW846:8080	0.10	<0.1 <0.1	G or C	2/5 YR
319-85-7	Hexachlorocyclohexane Beta-BHC	SW846:8080	0.10	<0.1 <0.1	G or C	2/5 YR
58-89-9	Hexachlorocyclohexane Gamma-BHC or Lindane	SW846:8080	0.10	<0.1 <0.1	G or C	2/5 YR
143-50-0	Kepone	SW846:8080	0.94	<0.94	G or C	2/5 YR
121-75-5	Malathion	SW846:8080	0.94	<0.94	G or C	2/5 YR
72-43-5	Methoxychlor	SW846:8270	0.10	<0.10	G or C	2/5 YR
2385-85-5	Mirex	SW846:8080	0.24	<0.24	G or C	2/5 YR
56-38-2	Parathion	614	0.94	<0.24	G or C	2/5 YR
11096-82-5	PCB 1260	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
11097-69-1	PCB 1254	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
12672-29-6	PCB 1248	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
53469-21-9	PCB 1242	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
0.2	PCB 1232	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
0.2	PCB 1221	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
12674-11-2	PCB 1016	SW846:8080	0.2	<0.2 <0.2	G or C	2/5 YR
1336-36-3	PCB Total	SW846:8080	1.4	<1.4 <1.4	G or C	2/5 YR
8001-35-2	Toxaphene	608	5.0	<5.0 <5.0	G or C	2/5 YR
BASE NEUTRAL EXTRACTABLES						
83-32-9	Acenaphthene	625	10.0	<10.0 <10.0	G or C	2/5 YR
120-12-7	Anthracene	625	10.0	<10.0 <10.0	G or C	2/5 YR
92-87-5	Benzidine	SW846:8270	50	<50.0 <50.0	G or C	2/5 YR
56-55-3	Benzo (a) anthracene	625	10.0	<10.0 <10.0	G or C	2/5 YR
205-99-2	Benzo (b) fluoranthene	625	10.0	<10.0 <10.0	G or C	2/5 YR
207-08-9	Benzo (k) fluoranthene	625	10.0	<10.0 <10.0	G or C	2/5 YR
50-32-8	Benzo (a) pyrene	625	10.0	<10.0 <10.0	G or C	2/5 YR
111-44-4	Bis 2-Chloroethyl Ether	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
39638-32-9	Bis 2-Chloroisopropyl Ether	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
85-68-7	Butyl benzyl phthalate	625	10.0	<10.0 <10.0	G or C	2/5 YR
91-58-7	2-Chloronaphthalene	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
218-01-9	Chrysene	625	10.0	<10.0 <10.0	G or C	2/5 YR
53-70-3	Dibenz(a,h)anthracene	625	20.0	<20.0 <20.0	G or C	2/5 YR
84-74-2	Dibutyl phthalate (synonym = Di-n-Butyl Phthalate)	625	10.0	<10.0 <10.0	G or C	2/5 YR
95-50-1	1,2-Dichlorobenzene	625	10.0	<10.0 <10.0	G or C	2/5 YR

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY ⁽³⁾
541-73-1	1,3-Dichlorobenzene	625	10.0	<10.0 <10.0	G or C	2/5 YR
106-46-7	1,4-Dichlorobenzene	625	10.0	<10.0 <10.0	G or C	2/5 YR
91-94-1	3,3-Dichlorobenzidine	SW846:8270	50	<50.0 <50.0	G or C	2/5 YR
84-66-2	Diethyl phthalate	625	10.0	<10.0 <10.0	G or C	2/5 YR
117-81-7	Di-2-Ethylhexyl Phthalate	SW846:8270	5.0	17.7 <5.0	G or C	2/5 YR
131-11-3	Dimethyl phthalate	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
121-14-2	2,4-Dinitrotoluene	625	10.0	<10.0 <10.0	G or C	2/5 YR
206-44-0	Fluoranthene	625	10.0	<10.0 <10.0	G or C	2/5 YR
86-73-7	Fluorene	625	10.0	<10.0 <10.0	G or C	2/5 YR
118-74-1	Hexachlorobenzene	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
87-68-3	Hexachlorobutadiene	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
77-47-4	Hexachlorocyclopentadiene	SW846:8270	20.0	<20.0 <20.0	G or C	2/5 YR
67-72-1	Hexachloroethane	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
193-39-5	Indeno(1,2,3-cd)pyrene	625	20.0	<20.0 <20.0	G or C	2/5 YR
78-59-1	Isophorone	625	10.0	<10.0 <10.0	G or C	2/5 YR
98-95-3	Nitrobenzene	625	10.0	<10.0 <10.0	G or C	2/5 YR
62-75-9	N-Nitrosodimethylamine	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
621-64-7	N-Nitrosodi-n-propylamine	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
86-30-6	N-Nitrosodiphenylamine	SW846:8270	5.0	<5.0 <5.0	G or C	2/5 YR
129-00-0	Pyrene	625	10.0	<10.0 <10.0	G or C	2/5 YR
120-82-1	1,2,4-Trichlorobenzene	625	10.0	<10.0 <10.0	G or C	2/5 YR
VOLATILES						
107-02-8	Acrolein	624	250	<250 <250	G	2/5 YR
107-13-1	Acrylonitrile	624	250	<250 <250	G	2/5 YR
71-43-2	Benzene	624	10.0	<10.0 <10.0	G	2/5 YR
75-25-2	Bromoform	624	10.0	<10.0 <10.0	G	2/5 YR
56-23-5	Carbon Tetrachloride	624	10.0	<10.0 <10.0	G	2/5 YR
108-90-7	Chlorobenzene (synonym = monochlorobenzene)	624	50.0	<50.0 <50.0	G	2/5 YR
124-48-1	Chlorodibromomethane	624	10.0	<10.0 <10.0	G	2/5 YR
67-66-3	Chloroform	624	10.0	<10.0 <10.0	G	2/5 YR
75-09-2	Dichloromethane (synonym = methylene chloride)	624	20.0	<20.0 <20.0	G	2/5 YR
75-27-4	Dichlorobromomethane	624	10.0	<10.0 <10.0	G	2/5 YR
107-06-2	1,2-Dichloroethane	624	10.0	<10.0 <10.0	G	2/5 YR

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY ⁽³⁾
75-35-4	1,1-Dichloroethylene	624	10.0	<10.0 <10.0	G	2/5 YR
156-60-5	1,2-trans-dichloroethylene	624	5.0	<5.0 <5.0	G	2/5 YR
78-87-5	1,2-Dichloropropane	624	5.0	<5.0 <5.0	G	2/5 YR
542-75-6	1,3-Dichloropropene	624	5.0	<5.0 <5.0	G	2/5 YR
100-41-4	Ethylbenzene	624	10.0	<10.0 <10.0	G	2/5 YR
74-83-9	Methyl Bromide	624	50 10	<50 <10	G	2/5 YR
79-34-5	1,1,2,2-Tetrachloroethane	624	5.0	<5.0 <5.0	G	2/5 YR
127-18-4	Tetrachloroethylene	624	10.0	<10.0 <10.0	G	2/5 YR
10-88-3	Toluene	624	10.0	<10.0 <10.0	G	2/5 YR
79-00-5	1,1,2-Trichloroethane	624	5.0	<5.0 <5.0	G	2/5 YR
79-01-6	Trichloroethylene	624	10.0	<10.0 <10.0	G	2/5 YR
75-01-4	Vinyl Chloride	624	10.0	<10.0 <10.0	G	2/5 YR
RADIONUCLIDES						
	Strontium 90 (pCi/L)	903.1	0.52	2.75 2.83	G or C	2/5 YR
	Tritium (pCi/L)	903.1	500	<500 <500	G or C	2/5 YR
	Beta Particle & Photon Activity (mrem/yr)	NIOSH 9310	4	42.6 31.5	G or C	2/5 YR
	Gross Alpha Particle Activity (pCi/L)	NIOSH 9310	3	<3.0 <3.0	G or C	2/5 YR
ACID EXTRACTABLES						
95-57-8	2-Chlorophenol	625	10.0	<10.0 <10.0	G or C	2/5 YR
120-83-2	2,4 Dichlorophenol	625	10.0	<10.0 <10.0	G or C	2/5 YR
105-67-9	2,4 Dimethylphenol	625	10.0	<10.0 <10.0	G or C	2/5 YR
51-28-5	2,4-Dinitrophenol	SW846:8270	10	<10	G or C	2/5 YR
534-52-1	2-Methyl-4,6-Dinitrophenol	SW846:8270	10 5	<10 <5	G or C	2/5 YR
87-86-5	Pentachlorophenol	625	50.0	<50.0 <50.0	G or C	2/5 YR
108-95-2	Phenol ⁽⁷⁾	625	10.0	<10.0 <10.0	G or C	2/5 YR
88-06-2	2,4,6-Trichlorophenol	625	10.0	<10.0 <10.0	G or C	2/5 YR
MISCELLANEOUS						
	Ammonia as NH3-N	350.1	200	<200 <200	C	2/5 YR
7782-50-5	Chlorine, Total Residual	SM 4500 - Cl - G	0.01	<0.01 <0.01	G	2/5 YR ¹¹
57-12-5	Cyanide, Total	335.2	10.0	<10.0 <10.0	G	2/5 YR
122-66-7	1,2-Diphenylhydrazine	SW846:8270	5	<5	G or C	2/5 YR
1746-01-6	Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	1613	0.00001	<0.00001 <0.00001	C	2/5 YR [Paper Mills & Oil Refineries]

CASRN#	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL ⁽¹⁾	REPORTING RESULTS	SAMPLE TYPE ⁽²⁾	SAMPLE FREQUENCY ⁽³⁾
N/A	<i>E. coli</i> / <i>Enterococcus</i> (N/CML)	9221B	(6)	4 2	G	2/5 YR ¹¹
7783-06-4	Hydrogen Sulfide	SW846:8260	100	<100 <100	C	2/5 YR
60-10-5	Tributyltin ⁽⁸⁾	NBSR 85-3295	0.05	<0.05 <0.05	G or C	2/5 YR

Gregory C. Hansrote

VP Covington Operations

Name of Principal Exec. Officer or Authorized Agent/Title

Signature of Principal Officer or Authorized Agent/Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. Sec. 1001 and 33 U.S.C. Sec. 1319. (Penalties under these statutes may include fines up to \$10,000 and or maximum imprisonment of between 6 months and 5 years.)

FOOTNOTES:

(1) Quantification level (QL) is defined as the lowest concentration used for the calibration of a measurement system when the calibration is in accordance with the procedures published for the required method.

Units for the quantification levels are micrograms/liter unless otherwise specified.

Quality control and quality assurance information shall be submitted to document that the required quantification level has been attained.

(2) Sample Type

G = Grab = An individual sample collected in less than 15 minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported. For grab metals samples, the individual samples shall be filtered and preserved immediately upon collection.

C = Composite = A 24-hour composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period. For composite metals samples, the individual sample aliquots shall either be filtered and preserved immediately upon collection, prior to compositing, or the composited sample shall be filtered and preserved immediately after compositing.

(3) Frequency: 2/5 YR = twice after the start of the third year from the permit's effective date but 180 days prior to permit expiration and samples are to be no closer than 90 days apart.

(4) A specific analytical method is not specified. An appropriate method shall be selected from the following list of EPA methods (or any approved method presented in 40 CFR Part 136). If the test result is less than the method QL, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].

<u>Metal</u>	<u>Analytical Method</u>
Antimony	204.1; 200.7; 204.2; 1639; 1638; 200.8
Arsenic	200.7; 200.9; 200.8; 1632
Cadmium	213.1; 200.7; 213.2; 200.9; 200.8; 1638; 1639; 1637; 1640
Chromium ⁽⁹⁾	218.1; 200.7; 218.2; 218.3; 200.9; 1639; 200.8
Chromium VI	218.4; 1636
Copper	220.1; 200.7; 220.2; 200.9; 1638; 1640; 200.8
Lead	239.1; 200.7; 239.2; 200.9; 200.8; 1638; 1637; 1640
Mercury	200.7; 245.1; 200.8; 1631
Nickel	249.1; 200.7; 249.2; 1639; 200.9; 1638; 200.8; 1640
Selenium	200.7; 270.2; 200.8; 1638; 1639; 200.9
Silver	272.1; 200.7; 200.9; 272.2; 1638; 200.8
Zinc	289.1; 200.7; 1638; 1639; 200.8; 289.2

(5) Any approved method presented in 40 CFR Part 136.

(6) The QL is at the discretion of the permittee. For any substances addressed in 40 CFR Part 136, the permittee shall use one of the approved methods in 40 CFR Part 136.

(7) Testing for phenol requires continuous extraction.

(8) Analytical Methods: NBSR 85-3295 or DEQ's approved analysis for Tributyltin may also be used [See A Manual for the Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science, dated November 1996].

(9) Both Chromium III and Chromium VI may be measured by the total chromium analysis. If the result of the total chromium analysis is less than or equal to the lesser of the Chromium III or Chromium VI method QL, the results for both Chromium III and Chromium VI can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

(10) The lab may use SW846 Method 8270C provided the lab has an Initial Demonstration of Capability, has passed a PT for Kepone, and meets the acceptance criteria for Kepone as given in Method 8270C.

(11) Sampled 2011.

Section

F

Thermal Variance Continuance Request

The purpose of this section is to formally request the continuation of the existing thermal variance as it concerns MeadWestvaco's Covington, VA operations.

The Executive Secretary of the State Water Control Board approved the 316(a) demonstration for MeadWestvaco's operations in Covington, VA on February 7, 1980. Since that time conditions responsible for the initial variance request have not changed. River flows and river temperatures have not changed in any significant manner. Thermal discharges were reduced significantly in the past due to the implementation of the Heat Load Reduction Project. However, discharges still result in the continuing need for the thermal variance.

In addition to the original 316(a) Demonstration Report submitted to the SWCB on September 5, 1979, MeadWestvaco has supplied the Department of Environmental Quality (DEQ) with additional information supporting the decision to grant the thermal variance. A November 1990 report prepared by Energy & Environmental Management Inc. (EEM) entitled "Thermohydraulic Model Verification and Temperature Effects Study at MeadWestvaco's Covington Mill" concluded "that the thermohydraulic model is verified for application to the Jackson River between Gathright Dam and Clifton Forge". It also concluded "that continued discharge of waste heat at current levels from the Covington mill will not cause an imbalance of the indigenous RIS".

In a February 8, 1994 letter to the DEQ, MeadWestvaco provided additional information concerning the verification of the thermohydraulic model. Graphs of the predicted versus the measured downstream river temperatures were provided. These graphs indicated the model accurately predicted downstream river temperatures.

On October 30, 1998 MeadWestvaco provided DEQ with two reports prepared by EA Engineering, Science, and Technology (EA). These two reports were entitled "Evaluation of Jackson River Temperature Model" and "Summary of Fisheries Information for the Jackson and James Rivers". Both of these reports support the continuation of the present thermal variance. The latter report concludes "The available information does support the overall conclusion that the Covington Mill discharges do not appear to be precluding maintenance of a balanced indigenous fish community in the Jackson River and adjacent areas of the James River".

It is not expected that the conclusions drawn from the studies indicated above would be any different under the current mill operations or those expected in the future.



EVALUATION OF JACKSON RIVER TEMPERATURE MODEL

Prepared for

Westvaco Corporation
Covington, Virginia

Prepared by

EA Engineering, Science, and Technology
15 Loveton Circle
Sparks, Maryland 21152

October 1998
11313.10

1. INTRODUCTION

A longitudinal thermohydraulic model was developed for the Jackson River as part of previous Section 316(a) studies. The model simulates temperature in the Jackson River from Gathright Dam downstream to past the Covington Mill. Inputs to the model include the flow and temperature of water released from Gathright Dam, meteorological data from Roanoke Airport, USGS river flow data, and the heat loading from the Covington Mill. The model includes 40 river cells extending from Gathright Dam, 17.8 miles upstream of the Covington Mill, to a location 19.1 miles downstream of the mill. Westvaco has developed a data base of Jackson River temperatures for the years 1990 to present. The stations included in the river sampling are provided in Table 1. The objective of the analysis provided in this document was to examine model validation by comparing predicted model temperatures to observed river temperatures.

The model input file includes daily flow data at the USGS stations at Jackson River below Gathright Dam, Jackson River below Dunlap Creek, Dunlap Creek, and Potts Creek. The daily heat loading for the summation of outfalls 001, 002, and 003 is also provided to the model. For this report, the model was started at model cell 19, 1.2 miles upstream of Outfall 003, using the daily Covington Mill intake temperature data. Outfall 003 is in model cell 20. The model validation was performed only for the Jackson River downstream of the Covington Mill. For this report, the Jackson River flow data at the location downstream of Dunlap Creek had been obtained for the January 1990 to September 1996. The comparison of observed and predicted Jackson River temperature presented in the following sections was performed for the nearly 7 year, 1990 to September 1996, period.

2. MODEL SENSITIVITY TO METEOROLOGICAL DATA

Modeled surface heat exchange between the atmosphere and the river surface is based on an equilibrium temperature and a surface heat exchange coefficient which are calculated from daily meteorological data. These two surface heat exchange parameters were available from an existing model input file for the October 1983 to September 1989 period. The initial model evaluation contained in this document used this historical heat exchange data. Successive model runs were executed for the 1990-1994 period using in turn the daily 1984, 1985, 1986, 1987 and 1988 surface heat exchange parameters. The purpose of this analysis was to examine the model sensitivity to meteorological data and to select a "typical" year of meteorological data for use in the comparison of predicted and observed river temperatures.

The model sensitivity results for meteorological conditions are summarized in Table 2. Table 2 provides the predicted annual average Jackson River temperature at model cell 22 (1.3 miles downstream) and model cell 35 (14 miles downstream). Model cell 35 is 2.5 miles downstream of the furthest river sampling station. Because model cell 22 is nearer to the upstream model boundary, surface heat exchange has had only a short time to effect downstream temperatures. As a result, the difference in annual average temperature is no more than 0.2 degrees F between the five meteorological data scenarios (1984 to 1988). The temperature difference between years (1990-1994) is dependent on the initial model temperature, river flow data, and mill heat loading. The coolest year was 1992 (59.7 -59.8 F) while the warmest year was 1994 (61.1-61.3 F). At model cell 35, surface heat exchange has had a longer time to act, resulting in a greater difference between the meteorological data scenarios. For any given year (1990-1994), the highest temperatures resulted from using the 1986 meteorological data and the lowest temperatures from the 1985 or 1988 data. The 1984 meteorological data scenario provided a mid-range result. The 1984 meteorological data was used to represent "typical" conditions in the comparison between predicted and observed river temperature in the following section. The variability in meteorological data from year-to-year is not enough to significantly impact the distribution of predicted river temperatures when summarized on a monthly or seasonal basis.

3. COMPARISON BETWEEN PREDICTED AND OBSERVED TEMPERATURE

A comparison between predicted and observed Jackson River temperatures is provided in Table 3 at 10 river sampling locations. The table provides a frequency distribution, mean, and standard deviation of the difference between predicted and observed temperatures for the 1990-1996 period. At the filtration plant (RM -0.6), the mean predicted temperature is 2.4 degrees F higher than observed values. At this model location, the predicted temperature is highly dependent on the plant intake temperature used at the model boundary. The 2 degrees F temperature difference between the plant intake data set and the values at the filtration plant are persistent in the model through the first mile downstream. Downstream of RM 1.3 (Swinging Bridge), the mean temperature difference decreases and is less than 0.5 degrees F between RM 5.5 and RM 11.5. The 50 percentile temperatures are typically several tenths of a degree higher than the mean temperatures. The standard deviation of the difference between predicted and observed temperature is typically 4 degrees F.

A frequency distribution by season is provided in Tables 4 to 10 for the river temperature stations RM 0.1, RM 1.7, RM 3.3, RM 5.5, RM 7.4, RM 9.5, and RM 11.5. The mean difference in predicted minus observed temperatures between seasons with more than 20 observations was typically within 1.0 degrees F. The standard deviation during the summer was less than the other seasons for all seven of the stations presented.

4. CONCLUSIONS

In general, the model provides a good fit to the observed data as represented by the mean difference between the predicted and observed temperatures. The variability between predicted and observed temperature, standard deviation typically 4 degrees F, is larger than one might expect. However, the seasonal frequency distributions indicate that the best model fit was obtained during the summer with a standard deviation that varied between 2.7 and 3.3 degrees F at stations downstream of Mill Bridge.. The positive bias of the model, mean predicted temperature higher than observed, and a portion of the model variability is attributable to the fact that the river sampling is frequently performed in the early morning in order to monitor the minimum dissolved oxygen. The difference between early morning and daily average temperature could easily differ by several degrees F due to diurnal solar heating. The over prediction of the model decreases in the downstream direction.

TABLE 1 SAMPLING LOCATIONS FOR THE COLLECTION OF
JACKSON RIVER TEMPERATURE DATA

Station	Distance form Mill (mi)	Model Cell
Filtration Plant	-0.6	19
Mill Dam East	0.0	19
Mill Dam West	0.0	19
Mill Bridge	0.1	20
Playground	0.9	22
Swinging Bridge	1.3	22
Fudges Bridge	1.7	23
Hercules Bridge	3.3	25
Ildewilde Bridge	5.5	27
Mallow Mall Bridge	7.4	29
Island Ford Bridge	9.5	31
Valley Ridge Bridge	11.5	33
Dunlap Creek	---	---
Potts Creek	---	---

TABLE 2 ANNUAL AVERAGE MODEL PREDICTED JACKSON RIVER
TEMPERATURE FOR FIVE SURFACE HEAT EXCHANGE SCENARIOS

Model Cell 22 - 1.3 miles Downstream from Covington Mill

Meteorological Data	Annual Average Model Predicted Temperature (F)				
	1990	1991	1992	1993	1994
1984	60.4	60.8	59.7	60.6	61.2
1985	60.4	60.8	59.7	60.5	61.1
1986	60.4	60.9	59.8	60.6	61.3
1987	60.4	60.9	59.8	60.6	61.3
1988	60.2	60.7	59.7	60.5	61.1

Model Cell 35 - 14 miles Downstream from Covington Mill

Meteorological Data	Annual Average Model Predicted Temperature (F)				
	1990	1991	1992	1993	1994
1984	58.7	58.9	57.8	58.4	58.6
1985	58.4	58.6	57.5	57.9	58.3
1986	58.9	59.2	58.1	58.6	58.9
1987	58.8	59.1	58.0	58.5	58.8
1988	58.4	58.6	57.6	58.0	58.3

TABLE 3 FREQUENCY ANALYSIS OF THE TEMPERATURE DIFFERENCE BETWEEN PREDICTED AND OBSERVED JACKSON RIVER TEMPERATURES (1990-1996)

Percentile (%)	Predicted - Observed Temperature (F) at River Station									
	RM -0.6	RM 0.1	RM 0.9	RM 1.3	RM 1.7	RM 3.3	RM 5.5	RM 7.4	RM 9.5	RM 11.5
10.0	-0.7	-0.7	-1.4	-2.1	-2.1	-3.0	-4.2	-4.8	-5.6	-5.1
15.0	0.2	0.2	-0.7	-1.4	-1.6	-2.2	-3.3	-3.2	-3.9	-3.7
20.0	0.6	0.7	0.1	-0.9	-1.2	-1.6	-2.5	-2.5	-2.6	-2.9
25.0	1.2	1.2	0.6	-0.4	-0.6	-1.0	-2.0	-1.9	-2.2	-2.3
30.0	1.5	1.6	0.9	0.0	0.0	-0.7	-1.5	-1.6	-1.9	-1.8
35.0	1.8	1.8	1.2	0.4	0.4	-0.3	-1.1	-1.2	-1.0	-0.8
40.0	2.0	2.2	1.5	0.8	0.9	0.2	-0.6	-0.2	-0.7	-0.3
45.0	2.3	2.4	1.8	1.4	1.3	0.8	0.1	0.2	0.2	0.4
50.0	2.6	2.7	2.5	1.7	1.6	1.2	0.6	0.9	0.8	0.8
55.0	2.9	2.9	2.8	1.9	2.0	1.6	1.1	1.4	1.6	1.5
60.0	3.2	3.3	3.2	2.4	2.4	1.9	1.4	1.7	1.9	1.9
65.0	3.4	3.6	3.5	2.8	2.8	2.4	1.8	2.0	2.1	2.3
70.0	3.8	4.1	4.0	3.4	3.2	2.7	2.2	2.5	2.4	2.8
75.0	4.1	4.6	4.4	3.7	3.6	3.3	2.8	2.9	3.0	3.3
80.0	4.3	5.0	4.8	4.2	4.2	3.6	3.4	3.6	3.5	3.7
85.0	4.8	5.6	5.5	4.6	4.8	4.4	4.1	4.4	4.8	4.7
90.0	5.3	5.8	6.0	5.1	5.3	5.1	4.8	5.0	5.2	5.9
MEAN	2.4	2.7	2.3	1.6	1.5	1.0	0.3	0.4	0.2	0.5
SD DEV	4.2	4.8	4.5	4.1	3.9	3.7	3.7	4.0	4.1	4.5
OBS	253.0	258.0	135.0	225.0	258.0	258.0	255.0	130.0	129.0	247.0

TABLE 4 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT MILL BRIDGE (RM 0.1)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-1.7	0.2	-0.3	-1.1	-0.7
15.0	-0.8	0.6	0.7	-0.5	0.2
20.0	0.6	0.9	1.1	0.2	0.7
25.0	1.1	1.5	1.6	0.5	1.2
30.0	1.4	2.0	1.7	1.0	1.6
35.0	1.9	2.2	2.1	1.4	1.8
40.0	2.9	2.4	2.2	1.6	2.2
45.0	3.2	2.7	2.5	2.0	2.4
50.0	3.3	3.0	2.7	2.4	2.7
55.0	3.3	3.5	2.9	2.7	2.9
60.0	4.2	3.8	3.3	2.8	3.3
65.0	4.3	4.2	3.6	3.4	3.6
70.0	4.6	5.5	4.1	3.7	4.1
75.0	4.8	5.6	4.4	4.0	4.6
80.0	5.2	6.0	4.6	5.0	5.0
85.0	5.4	6.3	5.2	5.7	5.6
90.0	5.6	6.7	5.5	6.3	5.8
MEAN	2.9	3.1	2.7	2.5	2.7
SD DEV	5.1	5.4	4.4	4.8	4.8
OBS	18.0	46.0	104.0	90.0	258.0

TABLE 5 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT FUDGES BRIDGE (RM 1.7)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-2.2	-5.0	-2.1	-1.9	-2.1
15.0	-1.8	-2.8	-1.6	-1.2	-1.6
20.0	-1.6	-2.0	-1.3	-1.0	-1.2
25.0	0.3	-0.6	-0.8	-0.3	-0.6
30.0	0.3	-0.1	-0.4	0.0	0.0
35.0	1.0	0.4	0.3	0.7	0.4
40.0	1.2	0.9	0.6	1.3	0.9
45.0	2.8	1.0	0.9	1.4	1.3
50.0	3.1	1.4	1.5	1.9	1.6
55.0	3.1	1.6	1.9	2.6	2.0
60.0	3.6	2.0	2.2	2.8	2.4
65.0	4.1	2.3	2.5	3.0	2.8
70.0	4.2	3.6	2.8	3.7	3.2
75.0	4.5	4.2	3.2	4.3	3.6
80.0	5.3	4.6	3.5	5.1	4.2
85.0	5.8	4.8	3.6	5.5	4.8
90.0	7.2	5.1	4.3	6.5	5.3
MEAN	2.5	1.0	1.2	2.1	1.5
SD DEV	5.1	4.1	3.1	4.5	3.9
OBS	18.0	46.0	104.0	90.0	258.0

TABLE 6 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT HERCULES BRIDGE (RM 3.3)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-1.0	-6.0	-3.2	-2.9	-3.0
15.0	-1.0	-2.8	-2.4	-2.2	-2.2
20.0	-0.9	-1.6	-1.9	-1.7	-1.6
25.0	-0.3	-0.9	-1.3	-1.0	-1.0
30.0	0.1	-0.6	-0.9	-0.7	-0.7
35.0	0.7	-0.6	-0.7	0.1	-0.3
40.0	1.7	-0.1	-0.3	0.5	0.2
45.0	2.9	0.4	0.8	0.9	0.8
50.0	3.5	1.0	1.2	1.2	1.2
55.0	3.5	1.3	1.5	1.6	1.6
60.0	3.6	1.6	1.9	1.8	1.9
65.0	4.4	2.3	2.0	2.7	2.4
70.0	4.8	2.6	2.5	3.0	2.7
75.0	4.9	3.7	2.7	3.6	3.3
80.0	4.9	4.3	3.2	4.5	3.6
85.0	6.7	4.4	3.4	5.5	4.4
90.0	8.1	4.8	3.6	5.8	5.1
MEAN	2.7	0.4	0.7	1.3	1.0
SD DEV	5.3	4.2	2.9	4.0	3.7
OBS	18.0	46.0	104.0	90.0	258.0

TABLE 7 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT ILDEWILDE BRIDGE (RM 5.5)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-1.6	-6.6	-4.1	-4.7	-4.2
15.0	-1.2	-3.2	-3.3	-3.7	-3.3
20.0	0.7	-2.2	-2.4	-2.8	-2.5
25.0	0.8	-1.7	-2.0	-2.5	-2.0
30.0	1.1	-1.1	-1.7	-2.1	-1.5
35.0	1.4	0.0	-1.3	-1.5	-1.1
40.0	1.4	0.3	-0.4	-1.2	-0.6
45.0	2.7	0.6	-0.1	-0.7	0.1
50.0	3.6	1.4	0.4	-0.3	0.6
55.0	3.6	1.9	0.5	0.9	1.1
60.0	3.7	2.1	0.9	1.3	1.4
65.0	4.3	3.3	1.3	1.5	1.8
70.0	5.7	3.5	1.8	2.3	2.2
75.0	6.9	3.9	2.1	2.8	2.8
80.0	7.4	4.4	2.3	3.6	3.4
85.0	8.1	4.6	2.8	4.3	4.1
90.0	8.1	5.6	3.1	5.9	4.8
MEAN	3.1	0.5	0.0	0.1	0.3
SD DEV	6.1	4.5	2.7	4.0	3.7
OBS	18.0	44.0	103.0	90.0	255.0

TABLE 8 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT MALLOW MALL BRIDGE (RM 7.4)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-7.5	-3.1	-4.1	-5.9	-4.8
15.0	-7.5	-2.3	-3.4	-4.8	-3.2
20.0	-7.5	-1.5	-2.5	-3.0	-2.5
25.0	-1.9	-1.4	-1.8	-1.9	-1.9
30.0	-1.9	-1.4	-1.6	-1.8	-1.6
35.0	-1.9	-0.1	-1.1	-1.5	-1.2
40.0	2.2	0.2	0.0	-1.1	-0.2
45.0	2.2	0.6	0.5	-0.2	0.2
50.0	3.7	1.0	0.9	-0.1	0.9
55.0	3.7	1.3	1.1	1.6	1.4
60.0	3.7	1.6	1.5	1.7	1.7
65.0	6.4	2.0	1.8	2.5	2.0
70.0	6.4	3.1	1.9	2.9	2.5
75.0	6.4	5.0	2.5	3.4	2.9
80.0	8.3	5.0	2.7	4.3	3.6
85.0	8.3	5.6	3.5	4.8	4.4
90.0	8.3	6.7	4.3	5.3	5.0
MEAN	1.9	1.1	0.3	0.2	0.4
SD DEV	6.5	4.0	3.0	4.8	4.0
OBS	6.0	17.0	58.0	49.0	130.0

TABLE 9 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT ISLAND FORD BRIDGE (RM 9.5)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-8.0	-2.2	-5.2	-6.6	-5.6
15.0	-8.0	-2.1	-4.5	-5.1	-3.9
20.0	-8.0	-1.7	-2.5	-2.8	-2.6
25.0	-2.1	-1.7	-2.3	-2.7	-2.2
30.0	-2.1	-1.7	-1.9	-2.2	-1.9
35.0	-2.1	-0.7	-1.0	-1.9	-1.0
40.0	1.9	0.4	-0.6	-0.8	-0.7
45.0	1.9	0.8	0.3	-0.7	0.2
50.0	3.8	1.5	1.1	0.1	0.8
55.0	3.8	1.9	1.2	1.6	1.6
60.0	3.8	2.1	1.6	2.1	1.9
65.0	5.9	3.0	1.7	2.4	2.1
70.0	5.9	3.1	1.9	2.9	2.4
75.0	5.9	5.3	2.3	3.2	3.0
80.0	8.0	5.3	3.0	4.0	3.5
85.0	8.0	5.8	3.5	4.8	4.8
90.0	8.0	5.8	4.4	5.5	5.2
MEAN	1.6	1.2	0.1	-0.1	0.2
SD DEV	6.3	3.9	3.3	5.0	4.1
OBS	6.0	17.0	58.0	48.0	129.0

TABLE 10 SEASONAL FREQUENCY ANALYSIS OF PREDICTED MINUS OBSERVED
JACKSON RIVER TEMPERATURES AT VALLEY RIDGE BRIDGE (RM 11.5)

Percentile (%)	Predicted - Observed Temperature (F)				
	Winter	Spring	Summer	Fall	Year
10.0	-2.7	-3.6	-4.9	-6.8	-5.1
15.0	-2.4	-3.3	-3.7	-5.5	-3.7
20.0	-1.1	-2.2	-2.8	-3.8	-2.9
25.0	-0.3	-0.8	-2.2	-2.9	-2.3
30.0	0.1	0.0	-1.8	-2.4	-1.8
35.0	0.8	0.5	-0.8	-1.9	-0.8
40.0	2.6	0.6	-0.3	-1.3	-0.3
45.0	2.6	0.8	0.3	-0.7	0.4
50.0	2.8	1.5	0.7	-0.2	0.8
55.0	2.8	2.1	1.1	1.1	1.5
60.0	3.7	2.9	1.6	2.4	1.9
65.0	4.3	3.3	1.8	2.9	2.3
70.0	5.4	3.4	2.0	3.1	2.8
75.0	6.6	3.7	2.2	4.0	3.3
80.0	8.1	4.7	2.4	5.6	3.7
85.0	10.4	5.4	3.2	6.5	4.7
90.0	11.1	5.9	3.7	7.5	5.9
MEAN	3.1	1.0	0.1	0.3	0.5
SD DEV	7.0	4.4	3.2	5.4	4.5
OBS	18.0	41.0	103.0	85.0	247.0



SUMMARY OF FISHERIES INFORMATION FOR THE JACKSON AND JAMES RIVERS

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1. INTRODUCTION

This report summarizes fisheries catch information for the Jackson and James Rivers in the vicinity of the Westvaco (Covington Mill) from 1989 to the present. The information is being summarized in support of an VPDES permit application for the Covington Mill and a continuation of the temperature variance of the VPDES permit. The focus of the report is a consolidation of 5 years of fisheries information collected in conjunction with fish tissue sampling efforts conducted in support of previous Covington Mill VPDES permits. The report also includes available information on gamefish assessments on the Jackson River since 1989 and some earlier fisheries data that supported the initial 316(a) demonstration for the Covington Mill.

Details relevant to the location of the EA Jackson/James Rivers sampling stations are in Section 2 of this document. EA fish collection techniques are detailed in Section 3, and a summary of the EA data is detailed in Section 4. Section 4 also includes a summary of fisheries information from other sources and a discussion of the data. References are provided in Section 5 of this report.

2. SAMPLING STATION LOCATIONS

The majority of the fisheries information for the Jackson and James Rivers in the vicinity of the Covington Mill is derived from field notes of species collected during fish tissue studies from 1989 through 1994. On behalf of Westvaco, EA developed a fish tissue sampling program for the Jackson and James Rivers in 1989. In accordance with the study plans submitted to the Virginia State Water Control Board (Botkins 1989), fish were collected from three locations on the Jackson River and two locations on the James River for most years of study. Four monitoring stations were located downstream from the Covington Mill outfall, and one control or background site was located upstream from the mill effluent. Fish were also collected from an additional James River (Eagle Rock) location in response to a request from VDH (Westvaco 1991) beginning in 1991. In the final year of the program, sampling was conducted only at the three locations immediately downstream of the plant. Detailed sampling station information is provided in Table 2-1 and Figure 2-1. Detailed maps of sampling locations are provided in the final reports (EA 1990 1991, 1991, 1992a, 1992b, 1993, 1994, and 1996) and brief descriptions of the sites are detailed below and summarized in Table 2-1. Table 2-1 also includes notes on the frequency of sampling.

Station 1, the background site, was located on the Jackson River in the vicinity of Clearwater Park, approximately 5.8 river miles (RM) upstream from the Covington Mill outfall. Monitoring Station 2 was located adjacent to the community park in Covington, approximately 0.9 RM downstream from the Covington Mill outfall (Figure 2-1). Station 3 was 14.2 RM downstream from the outfall, in the area immediately upstream from the Jackson River/Karnes Creek confluence near Low Moor. Stations 4 and 5 were located in the James River, approximately 52.3 and 86.4 RM downstream from the Covington Mill outfall, respectively. The Station 4 study reach was immediately upstream from the Horseshoe Bend boat ramp; however, a lack of sufficient numbers of designated target specimens at this location necessitated sampling at alternative locations, including as far downstream as the I-81 bridge (58.7 RM downstream of the mill) and the Route 11 bridge in Buchanan (60.6 RM downstream of the Mill). One additional reach, located in Springwood, was approximately 56.2 RM downstream from the mill outfall (Figure 2-1) and was used most often to supplement collections from Horseshoe Bend (Table 2-1). Monitoring Station 5 was in the vicinity of the railroad bridge near Snowden, approximately 86.4 RM downstream from the mill outfall, and immediately upstream from the Virginia Power Company Cushaw Hydroelectric Station and Dam. A request from VDH for additional specimens of common carp necessitated the

sampling of an additional James River reach. Sampling efforts were concentrated in the reach located upstream from the Craig Creek confluence, near Eagle Rock—approximately 39.9 RM downstream from the mill outfall (Figure 2-1).

All sampling stations contained (or were contained within) pool habitats and/or depositional zones, and were separated by a minimum distance of approximately 6.7 RM. All available habitats were sampled within each study reach in an effort to collect the desired complement of fishes for tissue analysis. Brief site/habitat descriptions are provided in Table 2-1.

Fish sampling was conducted in the immediate vicinity of each location described above; however, the sample reach at each station was extended to a maximum 2.4 RM length to facilitate collection of the required number and species of fish for tissue analysis. The sample reach varied considerably by survey period at most locations except those closest to the Mill. Specific details on the length of river sampled during each survey year can be found in the EA reports (EA 1990 1991, 1991, 1992a, 1992b, 1993, 1994, and 1996).

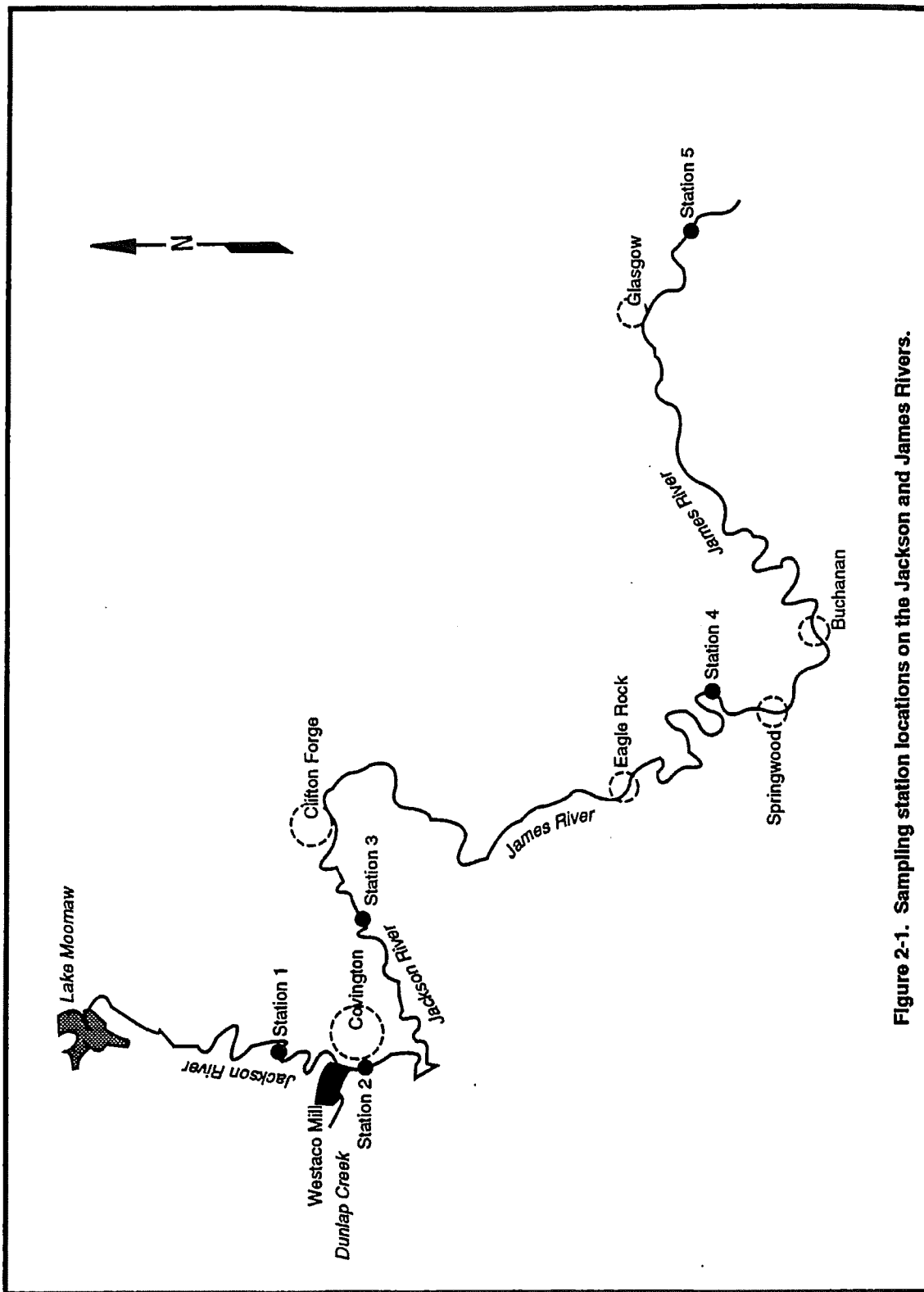


Figure 2-1. Sampling station locations on the Jackson and James Rivers.

TABLE 2-1 JACKSON RIVER AND JAMES RIVER SAMPLING STATION INFORMATION

<u>Station Number</u>	<u>Distance From Outfall</u>	<u>Station Location</u>	<u>Site Description/Habitat Type</u>	<u>Comments</u>
1	5.8 river miles (RM) upstream from the Covington Mill outfall	Jackson River, near Clearwater Park, in the vicinity of the Rt. 687 bridge.	Characterized by pool, riffle, and run habitats. Maximum depth approximately 6 ft. Substrate primarily cobble and boulders, some bedrock, leaf litter and fallen trees.	Sampled during all survey periods except 1994.
2	0.9 RM downstream from the Covington Mill outfall	Jackson River, near the community park (Covington) adjacent to the USGS gauging station (downstream from Dunlap Creek confluence).	Characterized by pool and run habitats. Maximum depth approximately 4 ft. Substrate primarily fines (sand/silt) and detritus with some fallen trees, boulders, and bedrock.	Sampled during all survey periods.
3	14.2 RM downstream from the Covington Mill outfall	Jackson River, immediately upstream from Karnes Creek confluence with the Jackson River near Low Moor.	Characterized by run and pool habitats. Maximum depth approximately 4 ft. Substrate primarily boulders and cobble, with some gravel, fines (sand/silt), and fallen trees.	Sampled during all survey periods.
Eagle Rock	39.9 RM downstream from the Covington Mill outfall	James River, in the vicinity of the Craig Creek-James River confluence.	Characterized by riffle, run, and pool habitats. Maximum depth approximately 6 ft. Substrate primarily cobble, with some boulders, fines (sand/silt), and fallen trees.	Sampled only during 1992, 1993 & 1994.
4	52.3 RM downstream from the Covington Mill outfall	James River, immediately upstream from the V/A Dept. of Game and Inland Fisheries Horseshoe Bend Boat ramp. Figure 2-5.	Characterized by riffle, run, and pool habitats. Maximum depth approximately 6 ft. Substrate primarily cobble and boulders with some bedrock, sand, and submerged aquatic vegetation along margins.	Sampled during all survey periods except winter 1992.

TABLE 2-1 (Cont.)

Station Number	Distance From Outfall	Station Location	Site Description/Habitat Type	Comments
4 (cont.) Springwood	56.2 RM downstream from Covington Mill outfall	James River, immediately downstream from the Rt. 630 bridge in Springwood.	Characterized by run and pool habitats. Maximum depth approximately 6 ft. Substrate primarily boulders and fines (sand/silt).	Sampled during all survey periods except 1989 and 1994.
4	58.7 RM downstream from the Covington Mill	James River in the vicinity of the I-81 bridge	Characterized by run and pool habitats. Maximum depth approximately 6 feet. Substrate primarily boulders, cobble, sand, & fines.	Sampled only in winter 1992.
4	60.6 RM downstream from the Covington Mill	James River immediately upstream from the Rt. 11 bridge, in Buchanan	Characterized by run and pool habitats. Maximum depths to 4 ft. Substrate primarily cobble & gravel with some mud & boulders.	Sampled only in 1990 and 1991.
5	86.4 RM downstream from Covington Mill outfall	James River, in the vicinity of the railroad bridge near Snowden, in the impoundment located upstream from VA Power Cushaw Hydro Station.	Characterized by pool habitat. Maximum depth sampled was approximately 8 ft. Substrate primarily fines (sand/silt/clay) and fallen trees with some boulders, cobble, and bedrock.	Sampled during all survey periods except winter 1992 and 1994.

3. DATA COLLECTION TECHNIQUES

3.1 Objectives

To understand the type of fisheries data collected as part of the tissue collection efforts, one must understand the objectives of the tissue studies. In accordance with the study plan details submitted to the Virginia State Water Control Board in September 1989 (Botkins 1989), the original goal of the fish tissue collections (EA 1990 and 1991) was to collect four composite samples at each of the stations identified in Section 2. Recommendations of VDH prescribed a more intensive sampling effort ultimately resulting in the collection of six composite samples at each station in 1991 and 1992. As a result, the objectives of the 1993 study returned to those identified for the base monitoring program (EA 1990 and 1991), in that only four composites were collected per station. In 1994, the study objectives were further reduced to include only the three stations immediately downstream of the mill and a reduced number of samples which included only bottom feeder and forage species.

Study plan details (Botkins 1989, Westvaco 1991) identified bullhead catfishes (*Ameiurus* spp.) and common carp (*Cyprinus carpio*) as the preferred target bottom feeder species. Smallmouth bass (*Micropterus dolomieu*), rock bass (*Ambloplites rupestris*), and sunfish species (*Lepomis* spp.) were the recommended target sport fish species. U.S. EPA Region IV recommendations highlighted in Botkins (1989) suggested that composited specimens should be adult fish of similar size (about 2 to 4 lbs each, or 2 to 3 years old, if obtainable). When possible, each Jackson and James river sample (composite) consisted of individuals of similar weight and length, with larger/adult specimens preferred. This type of tissue evaluation specifically targets larger fish and generally does not provide a holistic evaluation of the fish community at the site. Only once (in 1994) were forage species specifically targeted for collections and evaluation and collections that year were only made at three locations.

Although outside of the scope of the tissue collections, the type of fish collected in addition to the target species were noted as part of EA's field notes. Although some notes were made on relative abundances of species present at each site collection, no actual quantification was made and any notes on size distribution or fish condition were completely qualitative. These qualitative field observations are the basis for the EA field data summarized in this report.

3.2 Methods

Sampling was conducted by an EA Engineering, Science, and Technology crew consisting of one American Fisheries Society Certified Fisheries Scientist and one Quality Assurance/Quality Control Officer. To standardize collections among years, most sampling was conducted in September or October. In 1991, however, collections were made in the summer (EA 1992b) with additional bottom feeder specimens collected in winter 1992 (EA 1992a). Detailed notes were recorded at each sampling station including the type of sampling gear, level of effort (time), general habitat types, sample reach length, weather conditions, fish species encountered, and selected physiochemical data. All notes were recorded on a standard EA Fisheries Record Form. In addition, *in situ* water quality measurements were taken concurrently with fisheries collections at each station. A Hydrolab Model 4041 water quality analyzer was used to measure dissolved oxygen, pH, water temperature, and conductivity at each station.

The field investigators were equipped with an array of fisheries collection gear which enabled sampling of all habitats (at each station) under a variety of river conditions. The U.S. EPA recommended active methods of fish collection in their Sampling Guidance Manual (Versar 1984), such as electrofishing, trawling, angling, or seining. These methods are preferred rather than passive methods (e.g., gill nets, trap nets, trot lines) because the collection period is typically shorter (i.e., hours versus days) thereby minimizing decomposition, and because samples are collected from much more definable areas (Versar 1984). Electrofishing was the principal sampling method at all stations; however, the use of gill nets and angling was necessary in order to collect the number and species of bottom feeders needed for analysis. A boat or pram equipped with a Coffelt VVP-2C electrofishing unit (pulsed direct current), powered by a 120-volt generator, was used to sample fish within each study reach. Electrofishing techniques followed those described in the National Dioxin Study (Versar 1984). All of the techniques utilized target larger individuals.

Fish collection techniques and level of effort (time) expended at each of sampling locations varied considerably among stations and years. Because the nature of the data summarized herein is qualitative, no attempt has been made to summarize the collection efforts for the five year period. In general, less effort was necessary at the stations in the Jackson River because the river is narrower and shallower than the areas of the James targeted for this study. Electrofishing was, therefore, more effective in the Jackson River. In terms of the overall electrofishing effort needed to collect the requisite numbers of target species within the Jackson River, Stations 2 and 3 (immediately downstream of the Covington Mill) required the least

amount of sampling effort during all survey periods. Trotlining, angling, and gillnetting was generally only necessary at stations 4 and 5 (in the James River) and occasionally at the control station (Station 1) in the Jackson River. This observation implies that the abundances of target species in the Jackson River immediately downstream of the Covington Mill were relatively high and stable throughout the tissue monitoring period (1989-1994).

4. RESULTS AND CONCLUSIONS

4.1 Results

The fish community information that was included in the tissue collection field notes was best summarized as a list of species observed at each site. Because the collections were not standardized or comprehensive for community assessment, comparisons of observations among years was avoided. Instead, all species observed at each location over the five year period were summarized by station in Table 4-1. The several locations that constitutes Station 4 were summarized together because of their geographic similarity relative to the Covington Mill.

Although few conclusions can be drawn from such a summary, several patterns are apparent. Station 1 is the only station within the Mill study reach that supports a coldwater fishery (as indicated by the presence of trout). Trout were noted at this location even before the Gathright Dam began cold water releases in early 1990, but seemed to increase in abundance throughout the period. At all locations (other than Station 1), the dominant gamefish were warmwater species (sunfish and bass). Rock bass, smallmouth bass, and redbreast sunfish were ubiquitous in the study reach which is typical of mountain rivers in this region. Although tolerant species such as common carp and white sucker were collected at most stations, pollutant intolerant species such as northern hogsucker were found both upstream and downstream of the Covington Mill. These are important observations with respect to the thermal variance for the Covington Mill. The Resident Important Species (RIS) identified in the 316 (a) thermal study (EIA 1979) were white sucker, rock bass, redbreast sunfish, smallmouth bass, and johnny darter. All RIS, except johnny darter, were collected in abundance below the Covington Mill outfall during the five year tissue monitoring period. The absence of johnny darter from the tissue collections would be expected because the sampling gear is biased for larger individuals and darter habitat was not targeted for tissue collections.

Due to the sampling biases, the number of shiner/minnow and riffle species (e.g. darters) observed is relatively low but this bias would apply equally to all stations. It should be noted that observations made at Eagle Rock were not as comprehensive as at other locations because the station was not sampled as frequently as other sites and only common carp were targeted, thus further biasing the observations. Fish health and condition is also difficult to gauge from general observations. All fish that were kept for tissue analysis were in good health and condition and no notes were found indicating that fish in poor condition were observed at any location.

Some other inferences (that would not be apparent from a species summary) can be made from the field notes. In general, the number of species observed at each station appeared to increase as tissue sampling objectives changed through the study period. Although this may be attributed to increased sampling efforts in 1992 and 1993, improvements in water quality in the basin through the study period could also have contributed. One other trend that was clear from the observations is that the families that dominated the community at each location throughout the study period were relatively stable. For example, Stations 2 and 3 are dominated by young sunfish species while Stations 4 and 5 are dominated by minnow species and these trends were noted each year.

One final inference from the EA fish observations. Excluding Eagle Rock (for the reasons previously stated), the number of species noted throughout the study period was relatively similar among all stations (except Station 3). Without quantifying the various species and habitat evaluations, specific conclusions about fish community health and balance are not possible. However, the number and type of species observed at most locations and the apparent stability of the dominant groups implies that a relatively healthy fish community probably exists at most locations.

The only available previous study within the reach that quantified the fish community was conducted in 1973 (Mohn 1973). Comparisons between the 1989-94 observations and the previous data are difficult due to the nature of the recent data and the changes that have been made in the system. The Gathright Dam (upstream of the Covington Mill) went into operation in the early 1980's and began cold water releases in 1990. These two significant changes in the Jackson River have probably changed river conditions throughout the reach, but particularly in the stretches upstream of the Covington Mill. Data from 1973 tend to corroborate this assertion. Data from two stations, one 10 miles upstream of the mill and one 15 miles downstream of the mill were presented in an Energy Impact Associated Report (EIA 1979). Based upon the species present, the area above the Covington Mill supported a warmwater fishery in the 1970's. The sunfish and catfish species collected above and below the mill at that time are very similar to those found at most locations downstream of the mill from 1989-1994. Therefore, the minnow and riffle species collected during 1973 are probably a good indication of the species that are found downstream of the mill today. Collections included 16 minnow species, one sculpin, and two darter species and all were typical of mountain rivers in the region.

More recent surveys of the Jackson River have been conducted in 1997 in the vicinity of Gathright Dam to assess the trout and other game fish populations and confirm that the forage base is sufficient to support both the wild and stocked populations of trout in the river (VDGIF 1997). In addition, the data from this study suggests that the further downstream from the dam release prior to influence by Westvaco's outfalls, the fish population starts to revert back to the original warm water fishery with more Centrachids species being observed. However, most of the work was conducted too far afield to be pertinent to evaluations of the fish community in the vicinity of the Covington Mill. The data does show that there is a sufficient forage base to support trout and that little increase in the populations of most forage species have occurred since coldwater releases have begun (VDGIF 1997). Although survival of stocked trout are fair, little wild reproduction is probably occurring. The coldwater releases have served to decrease the populations of redbreast sunfish and smallmouth bass in the tailrace, which was expected (VDGIF 1997). The VDGIF reports indicate that fish communities in the Jackson River upstream of the mill appear to be relatively diverse and balanced and, with a few exceptions, most populations are relatively stable (VDGIF 1997).

4.2 Conclusions

The EA fish observations, considered in the context of the historical data from the site and the recent data from upstream support several conclusions:

- Fish communities within the Jackson River in the vicinity of the mill appear to be stable and of relatively high diversity.
- Many of the species observed in 1973 upstream and in the vicinity of the mill have been collected more recently (EA collections during the 1990s). Community structure downstream of the mill appears to be very similar to the historical fish community structure.
- Observations during EA field sampling seemed to indicate that diversities were stable and perhaps even increasing in the tissue monitoring reach.
- The fish identified as Resident Important Species (RIS) for the thermal variance were also the target species for the tissue monitoring work. These species were most abundant at the stations immediately downstream of the mill and abundances were high enough and stable enough to support the five year tissue monitoring program.
- Coldwater releases from Gathright dam have altered the fish community upstream of the Covington Mill but the fish community appears to be healthy and stable and the

further downstream of the dam, prior to Westvaco's outfalls appears to be reverting back to the historical warmwater fishery.

Without contemporary quantitative fisheries data, it is impossible to make any definitive conclusions about the current state of the fish communities in the Jackson and James Rivers. The available information does support the overall conclusion that the Covington Mill discharges do not appear to be precluding maintenance of a balanced indigenous fish community in the Jackson River and adjacent areas of the James River.

TABLE 4-1 FISH SPECIES COLLECTED DURING TISSUE SAMPLING IN THE JACKSON AND JAMES RIVERS, 1989-1994.

Species	Station					
	1	2	3	4(a)	5	Eagle Rock
Bluntnose minnow		✓				
Mimic shiner		✓				
Cutlips minnow	✓					
Creek chubsucker	✓	✓	✓	✓		
Golden shiner	✓	✓		✓		
River chub		✓				
Central stoneroller	✓			✓	✓	
Common carp		✓	✓		✓	✓
Fallfish	✓	✓	✓		✓	
Shiner/minnow spp.	✓	✓		✓	✓	
Goldfish			✓			
Black jumprock	✓	✓	✓	✓		
Shorthead redhorse				✓	✓	
Redhorse suckers					✓	
Northern hog sucker	✓	✓		✓		
Quillback				✓	✓	
White sucker	✓	✓	✓	✓		
Yellow bullhead	✓	✓	✓	✓	✓	
Brown bullhead	✓	✓		✓		✓
White catfish		✓	✓			
Channel catfish				✓	✓	
Flathead catfish				✓	✓	✓
Madtom sp.				✓	✓	
Rainbow trout	✓					
Brown trout	✓					
Chain pickerel	✓	✓				
Muskellunge				✓	✓	
Rock bass	✓	✓	✓	✓	✓	✓
Redbreast sunfish	✓	✓	✓	✓	✓	
Warmouth		✓			✓	
Black crappie		✓				
Bluegill	✓	✓	✓	✓	✓	
Pumpkinseed		✓	✓	✓		
Green sunfish			✓			
Misc. Juv. Sunfish			✓		✓	
Largemouth bass		✓	✓	✓	✓	
Smallmouth bass	✓	✓	✓	✓	✓	
Roanoke darter				✓		✓
Sculpin sp.	✓					
Total Taxa	19	23	16	22	19	5

(a) Includes collections at all areas designated as Station 4: 52.3 RM, 56.2 RM (Springwood), 58.7 RM; and 60.6 RM downstream of the Covington Mill.

Note: Species in bold are Resident Important Species identified in previous thermal studies of the Covington Mill.

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Section

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April 1, 2011

Ms. Susan Edwards
Department of Environmental Quality
Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

Dear Ms. Edwards:

The purpose of this letter is to request a testing waiver from certain application testing requirements associated with the reissuance of the VPDES permit for the MeadWestvaco storm water outfalls. The VPDES permit application package Form 2F Item VII Part B requires the applicant to "list...any pollutant listed in the facility's NPDES permit for its process wastewater..." and to "complete one table for each [storm water] outfall." The instructions further specify that the applicant "...report the results, except as provided in the General Instructions." The General Instructions state that "[the applicant] must list the pollutant if [the applicant] knows or has reason to know that the pollutant is present in the [storm water] discharge, and either report quantitative data for the pollutant or briefly describe the reasons the pollutant is expected to be discharged." This language allows a qualitative description of the pollutants if the pollutants are expected in the discharge. MeadWestvaco requests that the following be used to demonstrate the reasons that pollutants are believed absent from these storm water discharges.

Dioxin and AOX are limited in the treated process wastewater outfall designated Outfall 003. The limitations for dioxin and AOX were imposed on this outfall due to the bleaching activities performed at the facility and the imposition of federal effluent guidelines on such activities. Storm water from the bleaching area is co-mingled with process wastewater and conveyed into the waste water treatment plant. Storm water from this area cannot enter into a drainage area for any of the other storm water outfalls. Therefore, MeadWestvaco does not have any reason to believe that these compounds would be present in these outfalls.

Ms. Susan K. Edwards
April 1, 2011
Page 2

MeadWestvaco requests that the above be used to serve in lieu of formal testing of all the storm water outfalls for dioxin and AOX.

If you have any questions concerning this letter, please call me at 540/969-5862.

Sincerely,



Mark C. Allman
SH & E Lead Engineer
Shared Business Support

MCA/pa



COMMONWEALTH of VIRGINIA

Douglas W. Domenech
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY Blue Ridge Regional Office

www.deq.virginia.gov

May 11, 2011

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Mr. Mark C. Allman
SH & E Lead Engineer
MeadWestvaco Corporation, Packaging Resources Group
104 East Riverside Street
Covington, Virginia 24426-1238

Re: VPDES Permit No. VA0003646, Covington Plant
Application Testing Waiver Request for VPDES Permit Reissuance 2012

Dear Mr. Allman:

The staff has reviewed your request of April 1, 2011 for a waiver from some testing required in conjunction with application for reissuance of the VPDES permit noted above. The request is to waive application testing from two parameters currently monitored in the effluent from the mill's wastewater treatment plant discharge, outfall 003. EPA Form 2F Part B requires analysis of pollutants in stormwater that are monitored under the current VPDES process wastewater discharge permit. Upon review of the request and supporting justification, a testing waiver is granted as we concur with the justification. It is not expected that the pollutants, Dioxin and AOX, would be in any of the stormwater discharges and if in any discharge that included stormwater they would be in that collected in the area that is processed along with the industrial wastewater and discharge through outfall 003.

This letter constitutes a waiver for the application testing requirements for Dioxin and AOX in stormwater required for EPA application Form 2F Part B in conjunction with the reissuance of the MeadWestvaco VPDES permit for the Covington mill VA0003646.

Please contact me at (540)562-6764 or by e-mail at Susan.Edwards@deq.virginia.gov if you have any questions or comments regarding this matter.

Sincerely,

A handwritten signature in cursive script that reads "Susan K. Edwards".

Susan K. Edwards
Environmental Engineer Senior